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EXAMINER

VIGUSHIN, JOHN B

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/911,754

Applicant(s)

MCCALL ET AL.

Examiner

John B. Vigushin

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-24 is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "**the** others of the groups" in line 2 (bold emphasis by the Examiner). There is insufficient antecedent basis for this limitation in the claim. What "others" of the groups claimed in base Claim 5? One possible way of overcoming the rejection may be to delete "**the**" before "others" in line 2.

### **Rejections Based On Prior Art**

3. The following reference was relied upon for the rejections hereinbelow:

*Sanwo et al.* (US 5,530,623)\*

\*Already made of record in Applicant's IDS, Paper No. 4.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-5, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Sanwo et al.

As to Claim 1, Sanwo et al. discloses, in Figs. 1 and 3, a termination card comprising: a substrate 77 having groups of fingers 51 on a first--i.e., right--side (having on module terminations 75 mounted thereon) of the substrate and groups of fingers 51 on a second--i.e., left--side (opposite the first side) of the substrate (col.3: 15-16); some of the groups of fingers 51 on the first side and some groups of fingers 51 on the second side are connected through module connectors 25 (by means of connector contacts 61R and 61L, respectively; see Fig. 2: connector contacts 61R correspond to the fingers 51 of the first, i.e., right, side of the modules and connector contacts 61L correspond to the fingers 51 of the second, i.e., left, side of the modules), and others of the groups of fingers 51 on the first side are coupled to on module terminations 75 on the first side, at the very least, by the wiring within substrate 77 (Figs. 1 and 3; col.3: 15-22; col.4: 12-24).

As to Claim 3, Sanwo et al. further discloses that the on module terminations 75 are in groups that correspond to the others of the groups of fingers 51 on the first side (Figs. 1 and 3; col.4: 20-24).

As to Claim 4, Sanwo et al. further discloses that the on module terminations 75 are created from resistor elements (col.4: 20-24).

As to Claim 5, Sanwo et al. discloses, in Figs. 1 and 3, a termination card comprising: a substrate 77 having groups of fingers 51 on a first--i.e., left--side of the substrate and groups of fingers 51 on a second--i.e., right--side (having on module

terminations 75 mounted thereon) of the substrate (col.3: 15-16); some of the groups of fingers 51 on the first side and some of the groups of fingers 51 on the second side are connected through module connectors 25 (by means of connector contacts 61L and 61R; see Fig. 2: connector contacts 61L correspond to the fingers 51 of the first, i.e., left, side of the modules and connector contacts 61R correspond to the fingers 51 of the second, i.e., right, side of the modules; see also col.3: 15-22 and col.4: 12-24), but some of the groups of fingers 51 on the first (i.e., left) side are inherently coupled to the second (i.e., right) side--through wiring within substrate 77--to on module terminations 75 on the second (i.e., right) side (see Fig. 3) in order to terminate the signals from the fingers 51 on the left side that are received from transmission line segment 73E (Fig. 3).

As to Claim 7 (as best understood by the Examiner in view of the 35 USC § 112, 2<sup>nd</sup> paragraph rejection, above), Sanwo et al. further discloses that the on module terminations 75 (on the right side of substrate 77) are inherently in groups that correspond to others of the groups of fingers 51 on the first (i.e., left) side in order to provide the necessary portions of the paths that enable termination of signals traveling on certain corresponding groups of transmission lines 73, through the inner wiring of substrate 77, to on module terminations 75 on the second (i.e., right) side of substrate 77.

As to Claim 8, Sanwo et al. discloses, in Figs. 1 and 3, a termination card comprising: a substrate 77 having groups of fingers 51 on a first--i.e., right--side (having on module terminations 75 mounted thereon) of the substrate and groups of fingers 51 on a second--i.e., left--side (opposite the first side) of the substrate; some of the groups

of fingers 51 on the first side and some of the groups of the fingers on the second side are connected through module connectors 25 (by means of connector contacts 61R and 61L; see Fig. 2: connector contacts 61R correspond to the fingers 51 of the first, i.e., right, side of the modules and connector contacts 61L correspond to the fingers 51 of the second, i.e., left, side of the modules; see also col.3: 15-22 and col.4: 12-24), and at least one other of the groups of fingers 51 on the first side are coupled to at least one group of on module terminations 75 on the first--i.e., right--side (Fig. 3).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanwo et al.

1a. In Claim 2, Sanwo et al. discloses, in Fig. 3, that still others of the groups of fingers 51 on the first (i.e., right) side are coupled to the second (i.e., left) side by means of the connector contacts 61R and 61L of module connectors 25 and the inner wiring of substrate 77 but does not teach other on module terminations 75 on the second (left) side to which said "still others of the groups of fingers 51 on the first [right] side" are coupled.

Ib. In Claim 6, Sanwo et al. does not teach other on module terminations 75 on the first (i.e., left) side to which said "still others of the groups of fingers 51 on the first [left] side" are coupled.

Ic. In Claim 9, Sanwo et al. discloses, in Fig. 3, that still others of the groups of fingers 51 on the first (i.e., right) side are coupled to the second (i.e., left) side by means of connector contacts 61R and 61L of module connectors 25 and the inner wiring of substrate 77 but does not teach other on module terminations 75 on the second (left) side to which said "still others of the groups of fingers 51 on the first [right] side" are coupled.

Ila,b,c. Since the on module terminations 75 are for the purpose of providing impedance matching terminations of the transmission lines 73 of the motherboard 15 and memory modules 31-34 (col.4: 12-24), then it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the termination board of Sanwo et al. by adding more module terminations 75 on the other unpopulated side of the substrate 77 to which the claimed "still others" of the groups of fingers 51 on the claimed side of substrate 77 are then coupled in order to provide more impedance matching terminations to a motherboard 15 that is functionally enhanced to have a greater number of memory modules thereon with correspondingly more interconnecting transmission lines 73 requiring impedance matching for applications that call for more memory capacity to be provided by the electronic system of Figs. 1 and 3.

***Allowable Subject Matter***

8. Claims 10-24 have been allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

As to Claims 10-24, patentability resides in **the combination of the termination card having on module terminations and the first module having on module terminations**, in further combination with the other limitations of base Claim 10.

10. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Higashida et al. (US 6,328,572 B1) discloses a plurality of daughter boards DB and a terminal board TB<sub>1</sub> (col.5: 16-21) that is shorter than the daughter boards DB<sub>1-7</sub> (Fig. 3). The daughter boards and the terminal board are keyed to ensure proper insertion into the corresponding connectors 12 (col.4: 56-62).

Jasper (US 6,109,929) discloses stacked memory modules 25, 35 and 29 with an terminator plate 27 mounted to a terminator connector 30 on the topmost memory module 29 to reduce the reflections from the end of data bus 23 (Figs. 4A,B; col.6: 32-



34 and 47-53). The terminator plate 27 is smaller than the memory modules 25, 35 and 29 (Fig. 4A).

Haba et al. (US 6,376,904 B1) discloses, in Fig. 3A, stacked IC die 410<sub>a-h</sub> having a termination element 450 at the end of the transmission line formed by bond wire conductors 440<sub>a-j</sub> in order to eliminate or reduce signal reflections from the end of the transmission line formed by bond wire conductors 440<sub>a-j</sub> (col.5: 26-40; col.6: 12-17). The termination element is a resistor which may be mounted to one or more IC die 410<sub>a-h</sub> (col.6: 12-24).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Vigushin whose telephone number is 703-308-1205. The examiner can normally be reached on 8:30AM-5:00PM Mo-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



John B. Vigushin

Examiner

Art Unit 2827

jbv

December 15, 2002